**BGCFL**

#### MATHS DEPARTMENT

# Maths, Mathematics, Maths ...

# YEAR 9

**SCHEME OF WORK**

**This scheme of work is to be used as a guide only. Sometimes due to unforeseen circumstances the class may be a week behind or sometimes may even be a week ahead of schedule. The topics will still be covered in the same order.**

Term 1Year 9

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| **Number** | Learning Objectives. | Resources. |
|  Week 1 | Up to Stage 6: Add, multiply and divide on paper. | Play money. Number lines.Dice.Cubes.Counters.Worksheets.Test sheets.ICT: Bitesize, Twinkl and many more resources.. |
| Notes: | This should consolidate all work from KS3. Students should be able to add and subtract any sized number. Also multiply and divide numbers to the best of their ability. Mastery of basic operation skills to the best of their abilities. |
| Week 2 | Stage 4: Recognise and use negative numbers in real life situations. |
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| Stage 4: Order negative numbers. |
| Stage 4: Add and subtract negative numbers. |
| Notes: | This should consolidate all work from KS3. Students should be able to add and subtract negative numbers of any size. Also multiply and divide negative numbers to the best of their ability. Mastery of negative number work to the best of their abilities. |
| Week 3 | Stage 7. Multiply any number by 10, 100 and 1000 |
| Stage 7: Divide any number by 10, 100 and 1000. |
| Notes: | This is a very important skill, and all students should be able to multiply and divide any number by 10 or 100 with or without a x 10 slider. |
| Week 4 | Stage 7: Multiply a 3 digit number by a 2 digit number. Stage 7: Divide a 3 digit number by a 2 digit number. |
| Notes: | Students who can use a multiplication algorithm should be able to multiply any sized numbers together. The same applies to division but fewer students will master this. |
| Week 5 | Stage 7: Add and subtract decimals to 2 decimal places.  |
| Stage 7: Multiply and divide numbers to 2 decimal places.  |
| Notes: | This is stage 7 work and therefore will be difficult for many students. All should be able to add and subtract to 2 decimal places. Only some will fully ne able to multiply and divide decimals. Push as far as possible. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding number and simple addition and subtraction. Use SOW for years 7 and 8 if required.Most able pupils can progress further by solving problems involving 4 or more digits including several decimal places.Many activities can be taught as starters or games at the end of each lesson. |

 Term 2 Year 9

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| **Shape and Measure** | Learning Objectives. | Resources. |
| Week 1 | Stage 3: Reflect simple shapes in a mirror line. | Number lines.Rulers.Metre rules.Pairs of compasses.Angle measures.Trundle wheels.Weighing scales.Measuring jugs.Maps.Textbooks.Worksheets.Plastic shapes.Test sheets.ICT: Bitesize, Twinkl and many more resources. |
| Stage 3: Recognise symmetry in 2D shapes. |
| Stage 4: Know the order of rotational symmetry of a shape. |
| Notes: | This will mostly be recapping previous work but needs to be mastered before the end of KS3. Careers for this section include design, fashion, architect and engineering. ORACY; Use vocabulary such as refection, symmetry, image and object in full sentences. |
| Week 2 | Stage 6: Enlarge shapes by a positive whole scale factor. |
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| Stage 6: Level 6: Enlarge shapes by a negative whole scale factor. |
| Notes: | This recaps previous work allowing all students to master at least enlarging by a positive scale factor. Most will understand enlargements with a centre of enlargement, and a few can be introduced to negative scale factors. |
| Week 3 | Stage 5: Find areas of shapes made from rectangles. |
| Stage 6: Find the volume of a cuboid. |
| Notes: | This is an opportunity to master all things to do with mensuration. Ranging from simple perimeters to volumes of compound cuboids. |
| Week 4 | Stage 4: Identify and name all parts of a circle. |
| Stage 6: Know the formulae for circumference and area of a circle. |
| Notes: | From simple naming of parts of a circle, to discovering Pi (this should be discovered in a practical lesson), and finding areas and circumferences of circles. Careers include engineering, space scientist, builders etc. |
|  Week 5 | Stage 4: Identify congruent shapes. |
| Stage 4: Know how to tessellate a 2D shape. |
| Stage 4: Draw nets of 3D shapes. |
| Notes: | As this is the end of term, this a great time to introduce some GCSE topics in a more laid-back manner. Allow topics are important, they can be introduced in practical hands-on lessons. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding simple reflection or finding area by counting squares etc. See SOW for year 7 and 8 if required.Most able pupils can progress further by enlarging a shape by a fractional scale factor or volumes of more complicated compound shapes etc.Many activities can be taught as starters or games at the end of each lesson. |

Term 3 Year 9

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| **Number** | Learning Objectives. | Resources. |
| Week 1 | Stage 4: Solve simple ratio and proportion problems. | Play money. Number lines.Dice.Cubes.Counters.Worksheets.Test sheets.ICT: Bitesize, Twinkl and many more resources. |
| Stage 4: Find best buys using ratio. |
| Stage 5: Split an amount into a given ratio. |
| Notes: | Ratio appears regularly in real life and careers. From cooking to painting, concrete mixing to hair dye, it occurs far more often than you think. From finding simple ratios move on to recipes for 4 people used for 6 people. Show how wages can be split into givem ratios. |
| Week 2 | Stage 5: Convert fractions in percentages and decimals. |
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| Stage 5: Convert percentages into fractions and decimals. |
| Stage 5: Convert decimals into fractions and percentages. |
| Notes: | A chance to master all the KS3 skills in proportion. This could range from identifying fraction, understanding simple percentages all the way to ordering a list comprising of percentages, fractions and decimals. Students should now be aware that they have seen fractions and percentages in shops and Amazon etc. |
| Week 3 | Stage 6: Find a fraction of a given amount. |
|  Stage 6: Find a percentage of a given amount. |
| Notes: | Another key life skill. Work out price reductions, pay rises, rates of climate change, immigration etc. |
| Week 4 | Stage 4: Add and subtract fractions with common denominator. |
| Stage 4: Add and subtract fractions with different denominators. |
| Notes: | A chance to master all KS skills in fractions. |
| Week 5 | Stage 6: Recognise all square numbers up to 15 x15. |
| Stage 6: Can calculate simple powers of whole numbers. |
| Notes: | A good introduction to KS4 Maths. All will understand that 3$$$$ = 3 x 3 and 2$$$$=2z2z2z2. Most will recognise square numbers up to 10$$$$. Use a calculator to solve problems such as 5$$$$ etc. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on understanding simple fractions, percentages etc.Most able pupils can progress further by solving problems involving powers and roots etc.Many activities can be taught as starters or games at the end of each lesson. |

Term 4

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| **Data Handling** | Learning Objectives. | Resources. |
|  Week 1 | Stage 3: Draw frequency diagrams. | Flip charts.Textbooks.Worksheets.Test sheets.ICT: Bitesize, Twinkl and many more resources. |
| Stage 4: Interpret frequency diagrams. |
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| Notes: | This is a chance to consolidate all KS3 knowledge on graphs and introduce more difficult Mathematical and scientifical graphs. Liase with the Science department for a chance for cross curricular work. |
| Week 2 | Stage 4: Draw and draw conclusions from scatter diagrams. |
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| Stage 4: Discuss correlation on scatter diagrams. |
| Notes: | This will be a brand-new topic. Explain how scatter graphs can be used to find relationships between two things. Oracy: Write proper reports on the findings from a scatter graph. Show that careers using scatter graphs are in research, business, science etc. |
| Week 3 | Stage 7: Construct pie charts. |
| Stage 7: Interpret pie charts. |
| Notes: | All students will be able to analyse a simple pie chart. Most will be able to construct a simple pie chart, including using a protractor accurately. Some will be able to produce more difficult pie charts. Show that pie charts are used a lot in media. ORACY. Write reports on the findings of a pie chart. |
| Week 4 | Stage 6: Find mode and median of a set of data. |
| Stage 6: Find the mean of a set of data. |
| Stage 6: Compare 2 sets of data using mode, median, mean and range. |
| Notes: | This will consolidate all KS3 knowledge on averages. All should be able to find averages from a list, some from a table and a few will be able to compare data from 2 sets. Allow students to master the knowledge at their level before moving on to the next. |
| Week 5 | Stage 6: Collect continuous data using equal class intervals. |
| Stage 6: Interpret and analyse continuous data. |
| Notes: | Make clear the difference between discrete and continuous data. You could collect data on height, age or if the weather is good, measure how far they can throw on object. Oracy: Write a full report on findings. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can use simple fractions for pie charts and use discrete data.Most able pupils can progress further by collecting and analysing more in depth data and test hypotheses. Many activities can be taught as starters or games at the end of each lesson. |

Term 5

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| **Shape** | Learning Objectives. | Resources. |
|  Week 1 | Stage 6: Name quadrilaterals. | Sets of plastic shapes.Lesson templates.Textbooks.Worksheets.Follow me cards.Flip charts.Mirrors.Pairs of compasses.Angle measures.ICT: Bitesize, Twinkl and many more resources. |
| Stage 6: Know properties of different quadrilaterals. |
| Notes: | ORACY: Correctly name and describe the properties of quadrilaterals. Compare sides, angles, lines of symmetry, order of rotational symmetry and parallel sides. |
|   Week 2 | Stage 7: Find exterior angles of polygons. |
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| Stage 7: Find interior angles of polygons. |
| Notes: | Start with recapping that the angle sum of a triangle is 180 degrees, and a quadrilateral has 360 degrees. Then introduce exterior angles, Then progress to interior angles. |
| Week 3 | Stage 7: Identify and evaluate corresponding and opposite angles on parallel lines.  |
| Stage 7: Identify and evaluate alternate angles on parallel lines.  |
| Notes: | Start by drawing parallel lines and a transversal line. By measuring the angles formed, students discover that there are only 2 values. Now introduce f, z, c and opposite angles. ORACY: Corresponding angles, alternate angles and allied angles. |
| Week 4 | Stage 5: Measure bearings accurately |
| Stage 5: Draw bearings accurately.  |
| Notes: | Careers involve the military, air traffic control or hobbies including orienteering. Show how to work out and draw bearings. A nice chance to recap scale drawing. |
| Week 5 | Stage 4: Draw simple shapes on isometric paper. |
| Stage 6: Can recognise plans and elevations from isometric drawings. |
| Notes: | A good chance to practice some practical skills. Make some plans on cardboard and make shapes. Careers include architect and professional model makers. (Car industry, Town planning etc.) |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on identifying polygons and quadrilaterals etc.Most able pupils can progress further by solving more complicated real life problems involving parallel lines etc. |

 Term 6

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| **Shape** | Learning Objectives. | Resources. |
|  Week 1 | Stage 2: Collect like terms. | Sets of plastic shapes.Lesson templates.Textbooks.Worksheets.Follow me cards.Flip charts.Mirrors.Pairs of compasses.Angle measures.ICT: Bitesize, Twinkl and many more resources. |
| Stage 6: Solve linear equations. |
| Notes: | Consolidate all algebraic knowledge. This will include collecting like terms, forming equations and substitution. Allow students should master as much as their ability allows. |
|   Week 2 | Stage 6: Solve linear equations. |
| Stage 7: Solve linear equations with unknowns on both sides. |
| Notes: | All students should understand what a linear equation is. All should be able to solve x + 2 = 4. Most should find solutions with equations involving multiplication and some will solve equations with unknowns on both sides. |
| Week 3 | Stage 2: Use the correct vocabulary used in probability. |
| Stage 7: Find experimental probabilities. |
| Notes: | A chance to master all skills in probability. Including understanding the probability scale, finding the probability of a n event, right up to finding experimental probabilities. |
| Week 4 | Stage 5: Listing all possible events. |
| Stage 5: Probability space diagrams.  |
| Notes: | This topic appears in every exam. Given a set op options, students should systematically find all possible outcomes. Probability space diagrams can be used to find the probabilities of events happening. |
| Week 5 | Stage 2-7. Recap all work. To include exam question practice. |
| Notes: | A chance to revise for the end of year exam. |
| Week 6 | Consolidation and end of term test. |
| Advice: Less able pupils may not complete all sections. They can concentrate on identifying polygons and quadrilaterals etc.Most able pupils can progress further by solving more complicated real-life problems involving parallel lines etc. |